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ABSTRACT

This self-training package is designed to help microcomputer users select appropriate and efficient educational software packages by using a software evaluation system. It is mainly designed for school teachers and parents. The system consists of a Criteria Rating Form (CRF) and a personal evaluation. The CRF--a five-point scale from excellent to not present and not applicable--objectively evaluates software quality. It concerns the accuracy and value of content, effectiveness of instructional design, appropriate record-keeping and management function, and ease of use. The personal evaluation provides four open-ended questions eliciting the user's judgments on the quality and usefulness of the software. The package is designed for use on the Apple IIe computer. Needs identification for selecting the right type of software, the use of the educational software evaluation system, and a practice evaluation are included (these three units are estimated to take 110 minutes to complete). Appendix 1 contains the system rating forms, and Appendix 2 provides an example of how the system is used. (SLD)

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How to Evaluate Educational Software Easily and Efficiently

For Teachers, Parents and Home Computer Users

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Self-Training Package

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April 1986

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Self-Training User's Guide

for Educational Software Evaluation

* * * Introduction * * *

§ Who Are the Users And What Are Their Needs

This self-training package is mainly designed for school teachers, and for parents who have a responsibility to select educational software packages for their children. Home computer users, who feel a need to establish guidelines for evaluating educational software, may also find this self-training package useful.

The purpose of this self-training package is to fulfill a definite need of microcomputer users who desire guidelines to help in selecting appropriate and efficient educational software packages. The need for procedural guidelines was clearly expressed in a survey of 57 teachers, parents and microcomputer users where 72 % indicated a definite need for assistance in establishing guidelines. Microcomputer users constantly face the challenge of selecting adequate educational software packages from an overwhelming quantity on the market with a wide range of quality. This self-training package is to help users decrease the feelings of being at a loss in selecting software packages. Moreover, it increases users' feelings of comfort and competence in selecting educational software.

§ An Overview of the Evaluation System and the Self-training Package

Why And When Do You Need to Use the Educational Software Evaluation System?

Why should it take a software evaluation system to do an evaluation? Can't the decision be based on personal impressions and preferences? To make an objective and responsive evaluation of any educational entity, basic criteria need to be identified and the evaluators need to have common grounds in using the criteria to rate educational software. The criteria rating form (see Appendix I) attempts to get some objective rating from the rater and the personal evaluation (see Appendix I) intends to illicit personal comments about the software reviewed.

Another question that might arise is: "When do I need to use this system?" You will need this system if you are in one of the following situations.

1. You want to know *what to look for* while evaluating a piece of educational software.
2. You need a guide to help you *evaluate and sort out your perceptions* about a reviewed software.
3. You want to go through the process of *evaluating educational software systematically*.

What Is the Educational Software Evaluation System?

The educational software system consists of two parts: I) a criteria rating form, and II) a personal evaluation (see Appendix I).

The Criteria Rating Form (Part I). The criteria rating form is divided into four sections, each section containing categorized educational software evaluation criteria, making it easy for the user to follow. The scale used in the rating form is 4 (EX for excellent), 3 (GD for good), 2(AD for adequate), 1(PR for poor), 0 (NP for not present) and - (N/A for not applicable). The rating scores of the software reviewed can be computed and then converted to one of the five quality categories: excellent, good, adequate, poor and trash. The criteria rating form is used with the intent to objectively evaluate the quality of educational software being reviewed.

The Personal Evaluation (Part II). Along with the criteria rating form, a personal evaluation will provide open-ended questions, allowing you to express personal opinions about the software being reviewed. Personal inputs such as the level of recommendation, and the changes you wish to see made in the program are all included.

How Is the Self-training Package Organized?

This self-training package is organized into three units: 1) Needs identification for selecting the right type of software, 2) the use of the educational software evaluation system, and 3) a practice of using the evaluation system to evaluate a piece of educational software. The estimated time needed for each unit and the materials needed for completing the whole self-training package are listed below:

Time Estimate:

Unit 1---------- 10 min.
Unit 2---------- 50 min.
Unit 3---------- 50 min.

Total: 110 min.

Materials Needed:

1) Self-training package, How to Evaluate Educational Software Easily and Efficiently
2) A calculator, a pen or pencil
3) An Apple IIe computer with a disk drive and a monitor
4) One educational software package -the Discovery Lab by MECC

How to Use this Self-training Package?

It is assumed that you know how to turn on the Apple IIe computer and the monitor as well as inserting and booting up the disk in the disk drive. The self-training package is intended to be self-instructional.

At the conclusion of this self-training package are two appendices. Appendix I contains the educational software evaluation system to assist you for later reference. You are welcome to make xeroxed copies. Appendix II is an example of using the educational software evaluation system to evaluate the package called The Problem Solving Strategies. You are to use it as a reference.

§ How to Obtain Help/Submit Suggestions

This Self-training package has been carefully designed, and refined through use by six users who have been kind enough to give insight and constructive criticism. If you would like to receive additional information or submit suggestions, please call or write to me at:

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Unit 1

Needs Identification

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Unit 1: Needs Identification

§ Do You Know What Kind of Educational Software You Are Looking for
§ Where Do You Start

Needs assessment is often a beginning task for education at all levels--from states, districts, and schools to individual students. In other words, if you want someone to learn something, you first must find out if the individual perceives the need, and secondly find out if he has a desire to learn how to fulfill that need. Identifying adequate educational software packages to meet the needs of your students could be a very difficult task because there are numerous educational software packages flooding the market with a wide range of quality. The use of microcomputers in schools and homes seems inevitable in today's society. Therefore, software selection is vital to the efficient use of computer systems.

To comfortably perform the task of selecting adequate educational software, a keen awareness about your student's needs is critical. The following four tasks should help you prioritize your student's areas for learning improvement and may serve as a guide if you are to identify adequate educational software for the student.

1. Select the *software appropriate for the student's grade level* .
2. Identify the *concepts and/or skills your student needs to gain* from the software packages.
3. Determine the *skill, concept, rule, or attitude that your student most needs to learn* .
4. Consider whether the *software package corresponds to the curriculum your student is in* .

After you have your student's learning profile in mind, the chance of selecting the educational software that is adequate and meaningful to the student should be greater.

§ Resources for Hunting Educational Software

You may want to begin the search for adequate educational software by going through educational software catalogues such as *K-12 Micro Media*, and software magazines such as *Classroom Computer Learning*, *Electronic Learning*, *Computing Teacher*, *Sunburst Computer Courseware*, *Educational Software Selector (TESS)*, and subject related magazines such as *Arithmetic Teacher*, *Mathematics and Computer Education* to get a feel for what educational software is available. Organizations such as the state office of education, computer user groups such as Micro X Change, the Boston Computer Society and Computer-Using Educators (CUE), and computer stores provide educational software catalogs and software packages for reviewing.

§ Two Primary Issues in Software Selection

When you find some interesting educational software packages, you need to consider two issues before you do any further evaluation of the software being reviewed.

1. Your hardware is compatible with the software package you are interested in.
2. The price is reasonable with what is being offered to you.

Obviously the first issue is the most important factor when selecting a piece of software. You may want to check whether the publisher has written it for your hardware, otherwise you may want to stop here. If you do not have a computer yet, you may want to select the software first and then decide what computer best fits the software you have selected. As for the second issue, it is determined according to your own discretion. Usually the price is listed in the catalog and is printed on the package. After you have checked the hardware compatibility, and the price of the software package, you will decide whether further evaluation of the software is necessary.

Unit 2

The Use of the Educational Software Evaluation System

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Unit 2: The Use of the Educational Software Evaluation System

§ How to Use the Criteria in the Criteria Rating Form

The following is a "how to" section identifying the criteria and the rating scale in the educational software evaluation system (See Appendix I) that are used to evaluate educational software, and how each criterion in the criteria rating form is used to evaluate the educational software.

The Use of the Rating Scale

The scale used in the criteria rating form is a 5-point scale ranging from 4 as excellent down to 0 as not present, and N/A which is not scored. In detail, the scale is 4 (EX for excellent), 3 (GD for good), 2(AD for adequate), 1(PR for poor), 0 (NP for not present) and - (N/A for not applicable).

Notice at the beginning of each criterion entry in the criteria rating form, there is a scale (4 down to 0 and -) with the corresponding descriptors of EX, GD, AD, PR, NP and N/A on the very top of each section. You are to rate the software based on the specified criteria by circling the numerical value that corresponds to the most fitting descriptor.

Four Sections in the Criteria Rating Form

a. Accuracy and value of the content.

- This section allows the evaluator to focus the evaluation on the quality of the presented content in terms of definition clarity, content accuracy and appropriateness for intended users as well as educational value of the content.

b. Effectiveness of instructional design.

- This section measures the effectiveness of the instructional strategies. It is considered the most important criteria of the four major criteria. The dynamics of instruction, such as availability of various difficulty levels, learner control of the rate and sequence, presentation design, learner interaction, effective feedback, and achievement of defined purposes, are all examined in this section.

c. Appropriate record-keeping and management function.

- The record-keeping and data management function keep track of the user's responses and report the user progress. This section also includes the functions of providing evaluative testing and further assignments.

d. Ease of use.

- This section is to check the ease of using the software, and the clarity of directions in the program and in the manual.

Scoring and Section Comments

The space provided at the end of each section allows you to make qualitative comments about the software package based on the specified criteria. The brackets at the left are for adding up the total points of each column separately.

Software Packages as examples

Eighteen educational software programs listed in an alphabetical order will be used to serve as examples in the discussion. Examples with the titles EXAMPLE or EXAMPLES are provided to illustrate the specific criterion discussed.

1. A*B*C*Dragon by Project CAISH
2. Area Quiz by R. L. Hawkin
3. The Assertiveness Training by CUE/Softswap
4. The Calendar Skills
5. Catch the Cow by Jana Birch
6. Count On Mac by the Think Educational Software Co.
7. The Decimal Skills by the Media Materials Co.
8. Give 'n Take by the Think Educational Software Co.
9. Good Times by the Think Educational Software Co.
10. The Linear Equations by CUE/Softswap
11. The Logic Practice by CUE/Softswap
12. Moptown Hotel by the Learning Co.
13. The Percent by the Media Materials Co.
14. Perimeter and Area by CUE/Softswap
15. The Problem Solving Strategies by MECC
16. Rocky's Boots by the Learning Co.
17. Spelling by MECC
18. States-Geography by MECC

The Use of Criteria in the Criteria Rating Form for Evaluating Educational Software

∞ ***Section a. Accuracy and value of the content.***

1) **Definition of objectives** Objectives are prescribed goals that the learner is expected to perform at a specified level after the lesson. Definition of objectives should be clear, full, and stated as measurable as possible. Educational software should always have a definition of objectives stated. The statement is often listed in the manual. If no manual is provided, the statement may be found at the beginning of the program.

EXAMPLES:

a. Excellent (rated 4)

The Problem Solving Strategies program gives clear, full and measurable objective statements (see Figure 1).

LEARNING OBJECTIVES After using this courseware the student should be able to:

- identify three problem-solving strategies: Trial and Error, Exhaustive Listing, and Simplifying the Problem (SELO IV-A-1);*
- state advantages and disadvantages of using these strategies (SELO IV-B-1);*
- apply these strategies to the problem of finding the squares in a grid (SELO IV-B-2);*
- accurately complete a table of data;
- identify patterns in number sequence.

Figure 1

b. Poor (rated 1)

The Perimeter and Area program shows the screen:

"Drill & Practice
Perimeter & Area of
Square - Rectangle - Triangle."

It is rated poor because little information is given about what the user is expected to do.

c. Not present (rated 0)

Some programs don't have any words about learning objectives at any place such as the MECC Spelling program.

2) **Definition of target audience** Target audience refers to the intended user that the program is designed for. The definition needs to be as specific as possible. It can often be found in the manual. Educational software should have a definition of target audience stated.

EXAMPLES:

a. Excellent (rated 4)

Grade Range: 5-9
Classroom Use: Individual
in the "Problem Solving Strategies". It has specification of user's grade range.

b. Good (rated 3)

For ages 9 and up in the "Rocky's Boots". It is more general than the previous example.

c. Adequate (rated 2)

For ages 9 and *up* in the "Moptown Hotel." The content of the program is not so appropriate for adults, thus it is rated 2.

d. Not present (rated 0)

The assertiveness Training program does not give any indication as to who the intended users are.

3) **Definition of prerequisite skills** The prerequisite skills are skills that a user needs to have in order to successfully learn from the program. They are also called readiness skills. Educational software should have a *clear* definition of prerequisite skills for the user before he participates in the program. It is often found in the manual or in the introduction section of the program.

EXAMPLES:

a. Excellent (rated 4)

The package "Decimal Skills" by Media Materials Company lists specific readiness skills such as three readiness skills for learning mixed numbers: converting mixed numbers to improper fractions, converting improper fractions to mixed numbers and comparing mixed numbers. In other words, the package user needs to have those skills or to master them by working on the worksheet in the accompanying workbook before she/he actually uses the program.

b. Adequate (rated 2)

In the "Problem Solving Strategies" package, the reading level of 6th graders is listed as prerequisite skills. The content of the program is mathematics related such as counting the diagonals within a shape and squares within a grid. It should provide a definition of prerequisite skills for the user in this regard such as those that the user can correctly compute the arithematic equations. The package fails to mention major prerequisite skills, and only provides the requirement of reading prerequisite skill.

c. Not present (rated 0)

The program "Linear Equations" goes into the lesson without the presentation of any prerequisite skills.

4) **Content accuracy** The content presented in a program should be accurate in the areas of *concepts*, the *information* the package delivers, and the *responses* to the user's answers. Some programs present incorrect concepts; spelling programs have incorrect spellings; some social studies related programs yield inaccurate information; and some programs accept incorrect answers or reject correct answers. It takes careful observations for the user to examine the content accuracy.

5) **Orientation of content toward objectives** refers to how well the content achieves the objectives. Based on the listed objectives or the intended objectives, the user should look for the skills and/or concepts the lesson intends to teach, and compare them with the content to see how successfully the content matches and teaches the skills and concepts.

6) **Appropriateness of content for intended users** should be examined in two ways:
i) the depth of the content -- whether it is too easy or too difficult for the intended user.
ii) the topics of the content-- whether they are adequate for the intended user.

7) **Appropriate vocabulary level for subject area and the learner** Some programs suggest a required reading level. However, the rule of the thumb is that if you find that the intended user runs into several new words (4, 5 or more) in two screens of text, you might want to carefully examine the appropriateness of vocabulary level. If you think the intended user will have no problems understanding the presentation, then the vocabulary level would be appropriate.

8) **Educational value of the content** can be determined by answering the following questions:

1. Are the skills and concepts presented in the program essential for the learner?
2. Can the package contribute to the learning process?
3. Does the package produce positive affective outcomes on the part of the student?
4. Is the material relevant to the student's needs; in other words, is it tailored to the curriculum of his class?

EXAMPLES:

a. Excellent (rated 4)

The Problem Solving Strategies provides three different ways of solving a problem (see Figure 2), training the user to be a creative problem-solver. The concept of different problem solving strategies and the process each takes are cleverly illustrated. Figures 3 and 4 present a problem and then the program leads the user through the process of each of the three problem solving strategies. Explicit explanations about the pros and cons of each strategy are also presented to help the use develop his own rationale for using or not using a certain strategy in a certain circumstance. The package answers positively to the above four questions for the 5th - 9th graders.

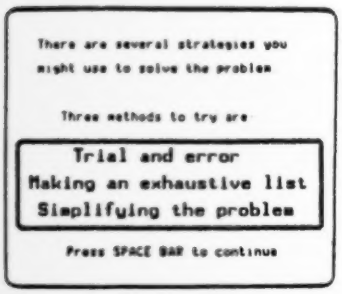

There are several strategies you might use to solve the problem.
Three methods to try are
Trial and error
Making an exhaustive list
Simplifying the problem
Press SPACE BAR to continue

Figure 2

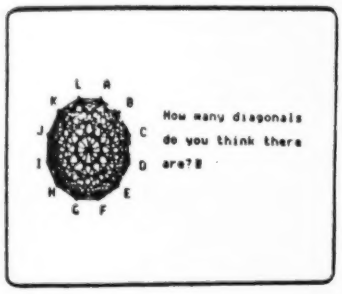


Figure 3

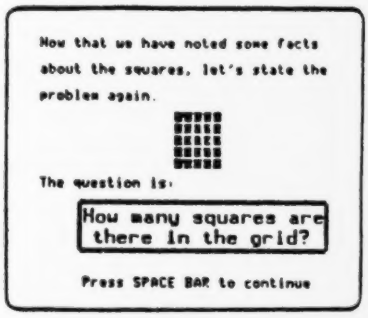

Now that we have noted some facts about the squares, let's state the problem again.
The question is:
How many squares are there in the grid?
Press SPACE BAR to continue

Figure 4

b. Good (rated 3)

The "Moptown Hotel" program provides opportunities for the user to receive clues and thus make a more accurate conclusion. It teaches children to use specific rules to solve a problem. For instance, in the Change Me subprogram the user would fill moppets into the boxes with a question mark, and make sure that each moppet in the row differs in two ways among the four characteristics--color, tail, width and height from the moppets on either side (see Figure 5).

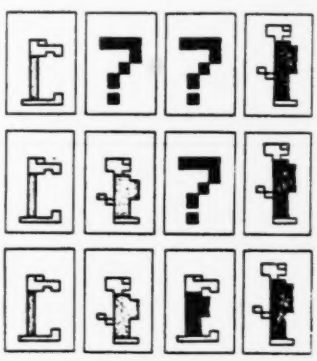


Figure 5

It is rated good rather than excellent because the

package certainly fulfills questions 1, 3 and 4, but if the user does not deduce from the clues; the process can easily turn to a guessing game. This problem could be detected by providing timely feedback and helpful explanations for the hit-and-miss user.

c. Adequate (rated 2)

The "A*B*C*Dragon" will continuously scan through four lower case letter choices (or upper case) until the user presses the switch. Pressing the switch indicates that the dragon scanned and selected a lower case letter which the viewer determined to correspond with the presented upper case letter such as " f " selected to correspond with "F" (see Figure 6.)

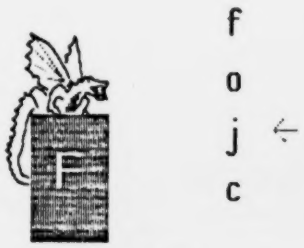


Figure 6

It has somewhat limited educational value for the following reasons: Simple matching does not efficiently contribute to the learning process of using the alphabet. Besides, the program does not allow any prescription or adjustment for the user so that the letters that the user masters will not appear as often as the letters he does not. In other words, the program is limited in terms of tailoring to the student's individual needs.

9) **Content is free of spelling, grammatical and typographical errors**

If the program has one or no spelling and grammatical errors in every 10 text screens, the package is rated as excellent (4 points). The following is a guide: 2 or 3 errors every 10 text screens as good (3 points), 4 or 5 errors as adequate (2 points), 6 or 7 errors as poor (1 point), and more than 7 errors has no points.

10) **Content is free of race, ethnic, sex and other stereotypes** Some programs may present apparent biases of race, ethnic, sex or other stereotypes. For example, they may suggest that Blacks are lazy and poor or that Europeans are more sophisticated than Americans in the social studies programs. Others may also have implied racial or sexual discrimination. For instance, "Statistics indicate that more women stay at home than men, therefore more women have depression due to the lack of social interactions."

If there is an obvious bias in any of the respects, the package should be rated 1 or 0 on this criterion. If there is a subtle expression of racial or sexual discrimination, the package will be rated 1 or 2 on this criterion. Otherwise, it is considered excellent or good depending on the approach the package employed in this regard. Some packages may not have anything related to this issue, they will be rated as N/A (-) in this aspect.

∞ ***Section b. Effectiveness of instructional design.***

1) **Achievement of the package's defined purpose** is determined based on the degree to which the design of learning activities matches the objectives.

EXAMPLE:

Excellent (rated 4)

The Problem Solving Strategies package deserves great compliments because the instructional strategies and learning activities used in the lesson completely accomplish all five learning objectives listed in Figure 1.

2) **Availability of varying levels of difficulty according to the skill level of the learner** requires a provision of varying levels of difficulty as well as clear instruction of what each level means and how to select a level that best fits the user's present skill level. If there are levels but without a clear explanation, then the package should be rated from adequate to poor depending on the appropriateness of the levels. If both are present, then it is rated from excellent to adequate depending on the appropriateness of the levels, clear explanations of the level differences, and clear explanations of an appropriate selection.

EXAMPLES:

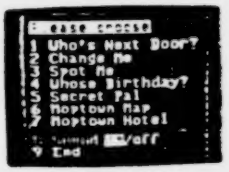
a. Excellent (rated 4)

The Thinking With Ink subprogram in the Problem Solving Strategies package "provides four levels of practice maps ranging from easy to difficult. Each illustrates a different strategy of solving the problem on the map." The manual explains clearly what each level is and how each works, and also suggests working from level 1 to level 4 because one level builds upon the next so that the user can finally work on a big and complex map after the practice maps.

b. Good (rated 3)

The Moptown Hotel provides varying levels of difficulty and some explanations. But the explanations do not help the user find out which level fits his skill level best (see Figure 7). Thus, the package is rated good rather excellent.

A few seconds later the MENU SCREEN will appear. Listed are the seven games on the diskette



The games are arranged sequentially, in order of difficulty
1 WHO'S NEXT DOOR is one of the easiest
7 MOPTOWN HOTEL is one of the hardest

Figure 7

c. Poor (rated 1)

The MECC Spelling provides the levels of 1 to 30 without giving any instruction of what the levels mean. Thus, it is rated as poor in this regard (see Figure 8).

Choose a drill from
1 to 30 and type the
number of your choice.
Type 77 if you want the
Apple to choose a drill
for you. Type 0 if you
want to quit.

Which drill would you
like to start with?

Figure 8

3) **Rate and sequence of instruction can be controlled by the learner** is checked by measuring to what degree the user controls i) the pace of the program, and ii) the order of concepts to be studied.

EXAMPLES:

a. Excellent (rated 4)

The Moptown Hotel program (see Figure 7) allows the user to control both the pace and order of the program.

b. Adequate (rated 2)

The A*B*C*Dragon program provides the rate of 1 to 10 for users to select from. However, it does not explain what each end means such as 1 for the slowest rate. The sequence is partly machine driven because it only allows the user to select a letter such as S (not a range such as P to S), and then will randomly give letter matching questions from A to S. Hence the program is rated adequate on this criterion (see Figure 9).

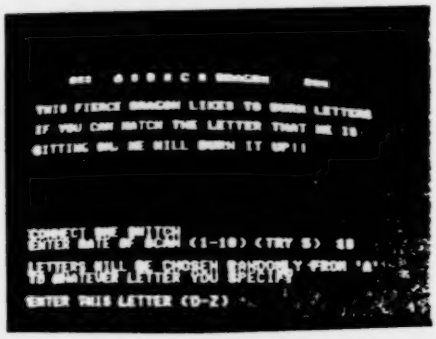


Figure 9

4) **The package is motivational to use** How well the program can hold the user's interest and how fun it is to use. The program usually presents a variety of activities which stimulate user's attempt to try more. It also provides the user with challenges and opportunities for success which make the user develop a sense of achievement.

5) **The program can be used independently** is measured by the degree to which the user can operate the program and follow the directions independently with a minimum of assistance from the teacher, once the computer and the program are set up.

EXAMPLES:

a. Excellent (rated 4)

The Count On Mac program only requires the user to answer the questions by selecting a number from the number strip to match the number of pictures in the square such as four snowmen (see Figure 10).

Children can independently use the program once it is set up.

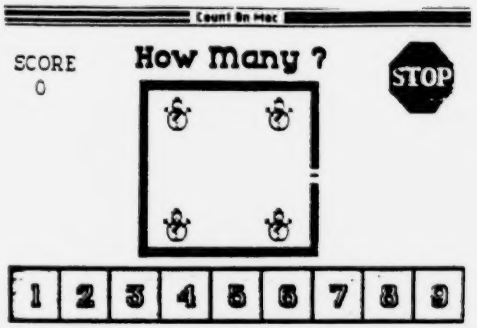


Figure 10

b. Poor (rated 1)

Catch the Cow: Scanning Trainer program is designed to be used by physically disabled and mentally retarded people. When it is selected as manual scanning vs. the auto scanning, two switches are used by the user. For the type of population this program serves, this design is a poor choice because most of them have a difficult time coordinating their eyes and hands to move the arrow for a choice using two switches (see Figure 11).

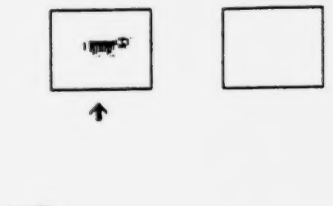


Figure 11

6) **Instructions in the program for the student** should be concise which means: i) brief and easy to follow, and ii) precise and not misleading. Instructions could range from very clear and concise to very wordy and confusing.

7) **Effectiveness and appropriateness of feedback** checks for answers to the following questions:

i. How relevant the feedback is for the user's age and grade level?

ii. How positive, constructive and non-threatening is the feedback?

iii. Is the feedback immediate?

iv. Is the feedback frequent enough?

v. Does the feedback provide help, hints or another chance for retry?

vi. Does the feedback *avoid* reinforcing incorrect responses such as avoid showing attractive graphics when the user gets the answer wrong?

If the program meets all of the above qualities, then feedback-giving is excellent; if it meets 5 out of 6, it is rated as good feedback; 4 out of 6 as adequate; below 3 is rated as poor to NP for this quality being absent.

EXAMPLE:

Adequate (rated 2)

The feedback given in the Decimal Skills program are immediate and answer positively to questions 4, 5 and 6, but the program randomly gives feedback as "Bad", "No good", "Bad news", "Try again" and "Mistake" when the user gives a wrong answer. Some of the words such as "bad" and "no good" may be threatening to sensitive students. Therefore, the package is rated as adequate on this criterion.

8) **Learner interaction with the program** is determined by measuring the activeness of the user in interacting with the program to obtain learning experiences. A software package with active user interaction should fulfill the following: i) The user makes choices, ii) the user responds to the questions and receives corrective feedback, and iii) the user has to do some thinking in order to operate the program.

EXAMPLE:

Excellent (rated 4)

The Give 'n Take and the Good Times programs allow the users to choose the digits (from 1 digit to 8 digits or random) to work individually or to compete with other players. In order to answer the questions and operate the program, the user should know the calculation concepts, digit placement, and master the arrows to get the digit placement right (see Figures 12 & 13). Besides, both programs give corrective feedback if the second try is not correct (see Figure 12). Therefore, they are rated as excellent.

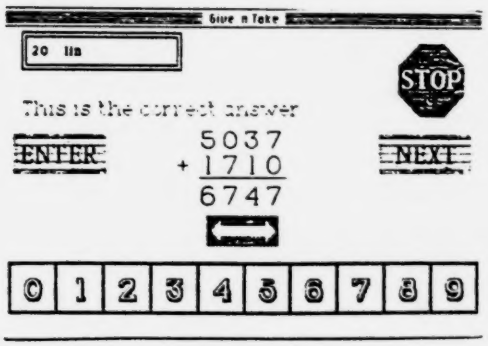


Figure 12

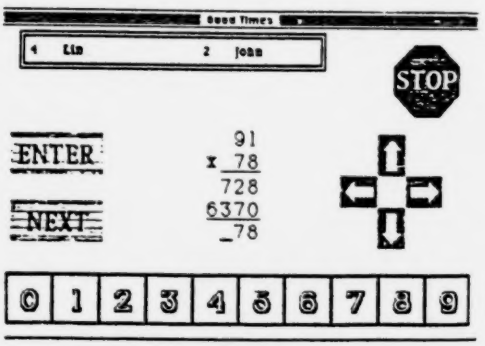


Figure 13

9) **Use of graphics, color or sound to enhance the instructional presentation**

The following questions should be answered to rate a software package on this criterion:

i) Does the use of these means make the presentation more attractive and effective?

ii) Does the use of the means make the user feel annoyed and does it distract from the effectiveness of the instructional presentation?

iii) Is there sufficient use of these means that the nature of the program demands?

EXAMPLE:

Excellent (rated 4)

The Problem Solving Strategies has clear geometric graphics (see Figure 14). Colors are well utilized and attractive in the Think With Ink subprogram, and sound is well employed in the Pooling Around subprogram with the options of turning the sound off or on.

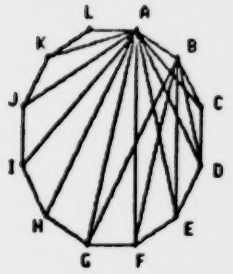


Figure 14

10) **Integration of instruction with the learner's previous experience**

The learner's previous experience may include i) the entry skills of the user (what the user already knows with regard to the instruction), and ii) the readiness skills provided in the program. If the program fully covers one of the above two, it is rated 4.

11) **Clearness and effectiveness of displays** is measured by identifying i) clear text screen, comfortable to read, ii) effective screen format and layouts, pleasant to focus on, iii) proper size of graphics, and iv) enough white space so the screen would not appear crowded.

EXAMPLES:

a. Poor (rated 1)

The Decimal Skill program gives 5 problems on the screen at a time which appear crowded and distracting (see Figure 15).

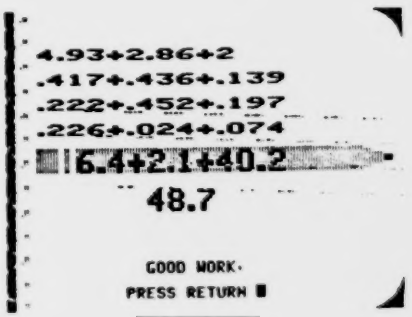


Figure 15

Figure 16

b. Not present (rated 0)

The Area Quiz does not have a clear text display neither is it effective in the screen layout, nor the use of white space (see Figure 16).

12) **Appropriateness in handling a wide range of student responses** is examined by measuring the program's acceptability of the following responses:

i) variations of the correct answer, i.e. 0.6, .6 and .60 should be equally acceptable.

ii) improper responses such as inputting in the wrong form, i.e. misspelling words, 1/4 or .25 for 25%, and upper case letters for lower case letters.

iii) common abbreviations, i.e. Y, N, T & F for "Yes," "No," "True," & "False".

13) **Instructional presentation following a logical and sequential order** is checked on the basis of i) the presentation makes sense and is easy to follow, and ii) the order of the presentation is sequentially arranged from easy to difficult level.

EXAMPLE:

Poor (rated 1)

The Percent package presents an equation format for the user to fill in to learn the concept of percent (see Figure 17). However, the user is easily stuck in the rigid structure. The presentation would not be confusing if there is an instruction given prior to this presentation.

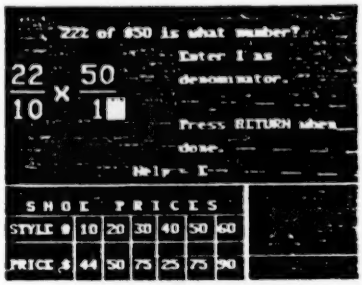


Figure 17

14) **Application of learning to an appropriate range of situations** should include two concerns: the applicability of learning to what range of situations, and how important the application of learning is to the user.

EXAMPLE:

Excellent (rated 4)

The program "Problem Solving Strategies" has a heavy mathematical orientation, but the three approaches of problem solving can be applied in almost all situations. Above all, problem solving strategies are very useful tools throughout our lives.

15) **Availability of exercises, problems or questions for the learner to practice the types of skills, attitudes, or knowledge specified by the objectives**

The availability of exercises or problems is important, but the program allowing the user to choose the number of exercises is far better than one requiring a fixed number.

EXAMPLE:

Good (rated 3)

The Problem Solving Strategies package gives extremely helpful exercises to the user at the end of each section. But, it does not allow the user to choose the number of exercise questions, hence it is rated good

rather than excellent.

∞ ***Section c. Appropriate record-keeping and management function.***

1) **Accurate record-keeping function of learner's responses for later retrieval** The program keeps accurate records of learner's responses: the number right and wrong, which answers were wrong, and what the incorrect answer was.

EXAMPLE:

Excellent (rated 4)

The Calendar Skills program records the incorrect answer to aid the teacher in diagnosing the reason for the error. The teacher can see, for example, that the student typed "Desember" for "December."

2) **Inclusion of diagnostic and evaluative testing in the program** Diagnostic testing is usually given at the beginning of the program. It provides information about the user's strengths and weaknesses (entry skills) with regard to the concepts and skills to be presented in the program, and usually gives suggestions to the user where to begin the program best. Evaluative testing is usually given at the end of the program or each section to give the user an idea as to how well he has mastered the concepts and skills presented in the package. The availability of these two features could save the user time by enabling him to start at the right level to avoid going through concepts or skills he already mastered, and by helping the user become aware of his own performance level at the end of the lesson.

EXAMPLE:

Excellent (rated 4)

The Logic Practice program gives a placement test and tells the user of his strengths and weaknesses, and where he should start in the program (see Figure 18).

The program also gives a series of evaluative testing to find out how well the user performs in each logic practice.

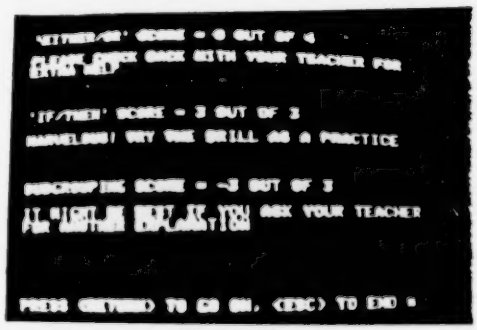


Figure 18

3) **Generating further assignments by the program** The program gives the user further assignments within the program or beyond the program.

4) **Reporting the learner's progress by the program** Learner's progress could be shown in various time frames: right after each performance, at the end of each section, or at the end of the program. Depending on the type of performances and the sequence of instructions, educational games, for example, is best to give a progress report after each performance.

5) **Allowing printouts or screen displays of the learner's cumulative records** The package should have either one of the two functions so that the user can see clearly how well he has learned the lesson such as a percentage score, and where he is standing with regard to the expected performances.

EXAMPLES:

a. Excellent (rated 4)

The Logic Practice program provides a screen display of the user's cumulative record such as "You got 12 out of 15 correct which is 80%. ....", and gives the correct answers for the three questions missed. Figure 19 is an example of the screen displays of the user's performance.

HERE IS THE STATEMENT YOU MISSED AND ITS CORRECT RESPONSE.

MR. TARBET NOTICED HIS LAWN MOWER WAS NOT CUTTING THE GRASS.
THE CLERK SAID THE LABOR CHARGE WAS $ 20.00.

THE CORRECT RESPONSE IS B

MR. TARBET HAD THE MOWER REPAIRED BY SOMEONE ELSE.

Figure 19

b. Excellent (rated 4)

The States-Geography program clearly displys a cumulative report of the user's performance (see Figure 20).

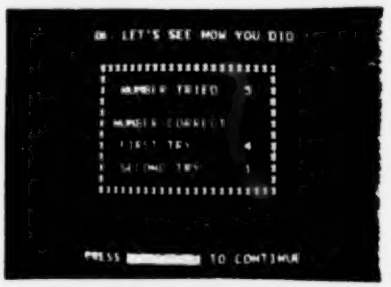


Figure 20

∞ ***Section d. Ease of use.***

1) **No break-down of the program under normal use** In other words, the program is crashproof.
EXAMPLE:
Poor (rated 1)
The A*B*C*Dragon program freezes unexpectedly (sometimes does and sometimes doesn't) when the user is in the middle of the program.

2)**The program is free of errors** Though the program does not crash, it has programming errors.
EXAMPLE:
Poor (rated 1)
The States-Geography by MECC presents a map of the United States and asks the user to type the name of the states identified such as Utah in Figure 21. It is rated poor because if the user accidentally types a space before the name, the answer is considered wrong (see Figure 21). The programming should have detected this type of error.

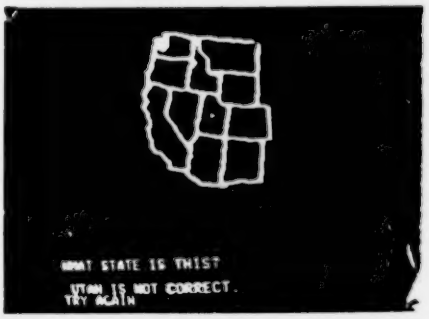


Figure 21

3) **"HELP" procedures provided in the program** It is necessary for complex packages to have help procedures so that the user can receive instant help and directions in operating the program when he is stuck.
EXAMPLE:
N/A (rated -)
In the Problem Solving Strategies program, the manual itself is very explicit and the instructions and explanations in the program are very clear and helpful. Besides, the program content and instructional design are not complicated, therefore HELP procedures are not applicable for this package.

4) **Comprehensiveness and effectiveness of users support materials such as manuals**
Manuals may include the pre-instruction activities, work sheets and follow-up activities. They should be integral to the design of the package. The manuals should contain all the information the user needs to use the program, and should be well organized so that it is easy to find an answer to a specific question.

5) **Appropriate use of the "EXIT" function in the program** The user can exit the program at any time or the program can exit itself when appropriate. Frequently, the <ESC> key is programmed to exit the program and return to the main menu.

EXAMPLES:

a. Excellent (rated 4)

The Problem Solving Strategies program always allows the use of ESC key in the middle of the program to get to the main menu to exit the program.

b. Excellent (rated 4)

The Count On Mac, Give 'n Take, and the Good Times programs all provide a STOP sign on the screen allowing an exit at any time (see Figures 10, 12 &13).

6) **Length of the program not too long to be tiring** To work on *one subprogram or one section* of a program, the estimates of attention span for learning are: 5 to 10 minutes for preschoolers and kindergarteners, 10 minutes to 25 minutes for grade schoolers, and half an hour to 45 minutes for junior and high school students.

7) **Ease of following the program operating instructions** The operating instructions should be clear and easy to follow so that the user could operate the program as independently as possible.

§ The Scoring Procedure

You have just finished the discussion of how to use the criteria in the rating form. The next thing to do is to deal with the rating data in the criteria rating form. The scoring method for the software package evaluated is simply obtaining the *average scores* of each section in the rating form, and the package as a whole. In the process of obtaining the average scores, it is necessary to *exclude the number of N/As* from the total number of criteria which is 37. After computing the average scores, *convert the scores* into the corresponding ratings according to the rating comparison standard.

The following is a series of steps to calculate the rating for each section, and for the package as a whole.

Step 1. See Appendix II which is a filled-out criteria rating form for the Problem Solving Strategies package. You should notice each entry has a selected rating about the package on each specified criterion. Table 1 on page 22 consists of five columns: Section, the difference of section entry count and the N/As, the total of the first four numbers in the brackets, the section average score, and section rating. It also has a row (the bottom row) entitled *Total* which gives the information about the software package as a whole. The table is used to help organize the calculated data. When you finish computing any of the data, fill it into the corresponding blank.

Table 1

The Scoring Table

Section	Sec. count-N/As :X	Total of first 4 no. in the [ ] : Y	Section Average : Y/X	Rating
Section a	___	___	___	_____
Section b	___	___	___	_____
Section c	___	___	___	_____
Section d	___	___	___	_____
Total	___	___	___	_____

Step 2. Go back to the end of each section in the rating form (see Part I of Appendix II), and count the number of N/As such as 1 in *Section d* of the Problem Solving Strategies package. Then subtract the N/As from the total number of section entries which is 7 and obtain 6. Write 6 down in the corresponding blank in Table 2 provided on page 23.

Step 3. Add up the numbers in the first four brackets in *Section d* and write the result, 21 in the corresponding blank in Table 2.

Step 4. Take the result from step 3 which is 21 to divide by the result in step 2 which is 6, and get a result of 3.5. In other words, the ease of use of the evaluated software is rated as excellent according to the rating comparison chart (see Table 3).

Step 5. Repeat steps 2, 3, and 4 until you finish all four criteria sections.

Step 6. To get a rating score for the software package as a whole, first add up the total scores of each section (second numerical column in Table 2) such as 35+54+18+21= 128 and the total count of entries that exclude N/As (first numerical column in Table 2) such as 10+15+5+6=36.

Step 7. Then divide the total score 128 by the total count of entries 36. You will get the average score for the software as a whole. Because 128 divided by 36 is 3.6, hence the package as a whole is rated as excellent educational software.

Table 2

The Scoring Table for the Problem Solving Strategies package

Section	Sec. count-N/As : X	Total of first 4 no. in the [ ] : Y	Section Average : Y/X	Rating
Section a	10	35	3.5	Excellent
Section b	15	54	3.6	Excellent
Section c	5	18	3.6	Excellent
Section d	6	21	3.5	Excellent
Total	36	128	3.6	Excellent

Table 3

Rating Comparison Standard

Quality Rating	Excellent	Good	Adequate	Poor	Trash
Score Range	3.5 or above	2.5 - 3.4	1.5 - 2.4	0.5-1.4	Below 0.5

§ How to Fill Out the Personal Evaluation... Then What?

By now, you know how to evaluate an educational software package and come up with a quality rating result using the software criteria rating form. The last part of the software evaluation system is the Personal Evaluation. The four questions are self-explanatory. An example is given to evaluate the Problem Solving Strategies package (see Part II of Appendix II).

After you have filled out the personal evaluation, review the evaluation made in the educational software evaluation system to help make a final decision about purchasing or using the software package being reviewed.

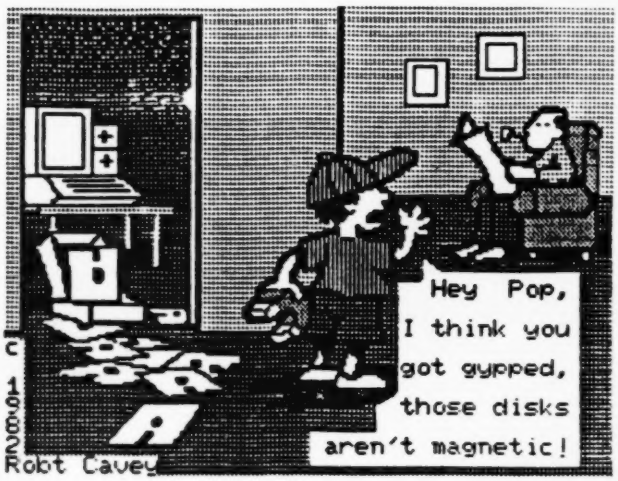


Figure ** A Break **

Unit 3

A Practice of Using the Evaluation System

The Unit Goals 25

The Unit Procedure ..... 25 -33

Unit 3: A Practice of Using the Evaluation System

§ The Unit Goals

The purpose of this unit is to allow you to practice using the evaluation system to evaluate a piece of educational software called Discovery Lab. All the forms are included in this unit. At the end of this unit, there is a suggested guide to be used as a reference. When you complete this unit, you should be able to evaluate educational software packages independently, and use the introduced evaluation system with increasing comfort.

§ The Unit Procedure

Six steps from reviewing, and evaluating the software package to mastery checking by comparing your evaluation with a suggested guide are to be followed.

Step 1: Independently review an educational software program called the Discovery Lab.
Take as much time as needed. First, briefly read through the manual that comes with the software package to find out the learning objectives, intended users, and required prerequisite skills, etc. Then, carefully put the disk into the disk drive, turn on your Apple IIe computer and the monitor. As you are reviewing the package, use a wide range of responses to test the efficiency of the software functions. When you have finished viewing the package, go on to the next step. If you feel a need to review parts of the program, feel free to do so.

Step 2: Use the educational software evaluation system provided below to evaluate the software package-- Discovery Lab accompanying this training guide.

The Educational Software Evaluation System

Part I: Criteria Rating Form

Date: _____

Name of the Evaluator: _____

Title of the software package: _____

Instructions: *Please use the scale below to respond to each statement after you have reviewed the software package. Circle the number at the front of each entry to rate the software package reviewed based on each specified criterion. At the end of each section, add up the first four numbers in the brackets and put the total in the blank for total at the right.*

4 (EX, excellent)	3 (GD, good)	2 (AD, adequate)
1 (PR, poor)	0 (NP, not present)	- (N/A, not applicable)

Section a. Accuracy and value of the content.

EX	GD	AD	PR	NP	N/A	
4	3	2	1	0	-	1) Definition of objectives
4	3	2	1	0	-	2) Definition of target audience
4	3	2	1	0	-	3) Definition of prerequisite skills
4	3	2	1	0	-	4) Content accuracy
4	3	2	1	0	-	5) Orientation of content toward objectives
4	3	2	1	0	-	6) Appropriateness of content for intended users
4	3	2	1	0	-	7) Appropriate vocabulary level for subject area and the learner
4	3	2	1	0	-	8) Educational value of the content
4	3	2	1	0	-	9) Content free of spelling, grammatical and typographical errors
4	3	2	1	0	-	10) Content free of race, ethnic, sex and other stereotypes

---

[ ][ ][ ][ ][ ] [ ] Total (except NP and N/A): [ ] Section Comments:

Section b. Effectiveness of instructional design.

EX	GD	AD	PR	NP	N/A	
4	3	2	1	0	-	1) Achievement of the package's defined purpose
4	3	2	1	0	-	2) Availability of varying levels of difficulty according to the skill level of the learner
4	3	2	1	0	-	3) Rate and sequence of instruction controlled by the learner
4	3	2	1	0	-	4) The package is motivational to use
4	3	2	1	0	-	5) The program can be used independently
4	3	2	1	0	-	6) Instructions in the program for the student
4	3	2	1	0	-	7) Effectiveness and appropriateness of feedback
4	3	2	1	0	-	8) Learner interaction with the program

4 3 2 1 0 - 9) Use of graphics, color or sound to enhance the instructional presentation
4 3 2 1 0 - 10) Integration of instruction with the learner's previous experience
4 3 2 1 0 - 11) Clearness and effectiveness of displays
4 3 2 1 0 - 12) Appropriateness in handling a wide range of student responses
4 3 2 1 0 - 13) Instructional presentation following a logical and sequential order
4 3 2 1 0 - 14) Application of learning to an appropriate range of situations
4 3 2 1 0 - 15) Availability of exercises, problems or questions for the learner to practice the types of skills, attitudes, or knowledge specified by the objectives

---

[ ][ ][ ][ ][ ][ ] Total (except NP and N/A): [ ] Section Comments:

Section c. Appropriate record-keeping and managment function.

EX GD AD PR NP N/A

4 3 2 1 0 - 1) Accuracy of the program's record keeping of learner's responses
4 3 2 1 0 - 2) Inclusion of diagnostic and evaluative testing in the program
4 3 2 1 0 - 3) Generating further assignments by the program
4 3 2 1 0 - 4) Reporting the learner's progress by the program
4 3 2 1 0 - 5) Allowing printouts or screen displays of the learner's records

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[ ][ ][ ][ ][ ][ ] Total (except NP and N/A): [ ] Section Comments:

Section d. Ease of use.

EX GD AD PR NP N/A

4 3 2 1 0 - 1) No break-down of the program under normal use
4 3 2 1 0 - 2) The program is free of errors
4 3 2 1 0 - 3) "HELP" procedures provided in the program
4 3 2 1 0 - 4) Comprehensiveness and effectiveness of users support materials such as manuals
4 3 2 1 0 - 5) Appropriate use of the "EXIT" function in the program
4 3 2 1 0 - 6) Length of the program not too long to be tiring
4 3 2 1 0 - 7) Ease of following the program operating instructions

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[ ][ ][ ][ ][ ][ ] Total (except NP and N/A): [ ] Section Comments:

Step 3: Compute the following data and fill them out in the table below using the rating comparison standard provided in Table 3:

Section	Sec. count-N/As : X	Total of first 4 no. in the [ ] : Y	Section Average : Y/X	Rating
Section a	___	___	___	___
Section b	___	___	___	___
Section c	___	___	___	___
Section d	___	___	___	___
Total	___	___	___	___

Table 3

Rating Comparison Standard

Quality Rating	Excellent	Good	Adequate	Poor	Trash
Score Range	3.5 or above	2.5 - 3.4	1.5 - 2.4	0.5-1.4	Below 0.5

Step 4: Compare your rating results with the *suggested guide* provided below. In the suggested guide, there are the statements in the parentheses at the end of some entries which are comments from the reviewer explaining some features of the software reviewed. Use the suggested guide as a reference rather than an answer key. If you feel a need to review parts of the program, feel free to do so. Then check your rating for mastery until you feel comfortable with them.

The Educational Software Evaluation System *(Suggested Guide)*

Part I: Criteria Rating Form

Name of the Evaluator: Linda Li Chang

Title of the software package: Discovery Lab

Please use the scale below to respond to each statement after you have reviewed the software package. Circle the number at the front of each entry to rate the software package reviewed based on each specified criterion. At the end of each section, add up the first four numbers in the brackets and put the total in the blank for total at the right.

4 (EX, excellent) 3 (GD, good) 2 (AD, adequate)
1 (PR, poor) 0 (NP, not present) - (N/A, not applicable)

Section a. Accuracy and value of the content.

EX	GD	AD	PR	NP	N/A	
(4)	3	2	1	0	-	1) Definition of objectives
(4)	3	2	1	0	-	2) Definition of target audience (It is stated in the manual as 6th-9th graders)
4	3	2	(1)	0	-	3) Definition of prerequisite skills (Reading level only)
(4)	3	2	1	0	-	4) Content accuracy
(4)	3	2	1	0	-	5) Orientation of content toward objectives (List objectives and how each objective is fulfilled.)
4	(3)	2	1	0	-	6) Appropriateness of content for intended users (For the motivated users, yes. Some intended users may feel alienated by the long terminologies about the specimen.)
(4)	3	2	1	0	-	7) Appropriate vocabulary level for subject area and the learner
(4)	3	2	1	0	-	8) Educational value of the content (supervised scientific methods of conducting experiments)
(4)	3	2	1	0	-	9) Content is free of spelling, grammatical and typographical errors
(4)	3	2	1	0	-	10) Content is free of race, ethnic, sex and other stereotypes

---

[32][3][0][ ][0][-] Total (except NP and N/A): [36]

Section Comments: The rules presented to be agreed upon by lab users were a nice touch. The content is appropriate and useful for learning how to conduct life science experiments.

Section b. Effectiveness of instructional design.

EX	GD	AD	PR	NP	N/A	
4	(3)	2	1	0	-	1) Achievement of the package's defined purpose (The presentation effectively achieves the following package defined purposes: variable set-up, experiment design, laboratory report and data analysis. However, the package does not provide sufficient training on making logical predictions and conclusions even at the first subprogram, the Training Lab. Besides, observations play a good part in conducting an experiment, but the package does not include any training in making scientific observations. Hence, the package is rated good on this criterion.)

(4) 3 2 1 0 - 2) Availability of varying levels of difficulty according to the skill level of the learner

4 (3) 2 1 0 - 3) Rate and sequence of instruction controlled by the learner (Rate yes. But the sequence of instructions is somewhat program driven.)

4 3 (2) 1 0 - 4) The package is motivational to use (The actions of the specimen are slow and subtle which require time and patience to do careful observations in order to make an accurate report of the experiment report. Unless the user is serious about planning an experiment, the pace of the package could easily discourage user interest in going through the whole process.)

(4) 3 2 1 0 - 5) The program can be used independently by the intended user

4 (3) 2 1 0 - 6) Instructions in the program for the student

4 (3) 2 1 0 - 7) Effectiveness and appropriateness of feedback (Experiment analysis is helpful but it is available only upon request.)

(4) 3 2 1 0 - 8) Learner interaction with the program

4 3 (2) 1 0 - 9) Use of graphics, color or sound to enhance the instructional presentation (The size of the specimen should be bigger to be effective. In addition, there is no sound provided in the program even though there is a sound variable for setting up an experiment. It would be more animating to provide sound effect with an option of off or on for the sound variable.)

4 (3) 2 1 0 - 10) Integration of instruction with the learner's previous experience (The next subprogram is the extension of the previous subprogram.)

4 3 (2) 1 0 - 11) Clearness and effectiveness of displays (The specimen could be larger to be more effective.)

4 (3) 2 1 0 - 12) Appropriateness in handling a wide range of student responses

(4) 3 2 1 0 - 13) Instructional presentation follows a logical and sequential order

4 (3) 2 1 0 - 14) Application of learning to an appropriate range of situations

4 (3) 2 1 0 - 15) Availability of exercises, problems or questions for the learner to practice the types of skills, attitudes, or knowledge specified by the objectives

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[16][24][6][0][0][-] Total (except NP and N/A): [46]

Section Comments: The presentations are not very exciting! Sometimes I feel that the sequence to conduct or to change the experiment is tedious with the way the main menu is set up.

Section c. Appropriate record-keeping and management function.

EX	GD	AD	PR	NP	N/A	
(4)	3	2	1	0	-	1) Accuracy of the program's record keeping of learner's responses
4	3	2	1	0	(-)	2) Inclusion of diagnostic and evaluative testing in the program
(4)	3	2	1	0	-	3) Generating further assignments by the program
4	3	(2)	1	0	-	4) Reporting the learner's progress by the program
(4)	3	2	1	0	-	5) Allowing printouts or screen displays of the learner's records

[12][0][2][0][0][/] Total (except NP and N/A): [14] Section Comments:

Section d. Ease of use.

EX	GD	AD	PR	NP	N/A	
(4)	3	2	1	0	-	1) No break-down of the program under normal use
4	(3)	2	1	0	-	2) The program is free of errors
4	3	2	1	(0)	-	3) "HELP" procedures provided in the program
(4)	3	2	1	0	-	4) Comprehensiveness and effectiveness of users support materials such as manuals
(4)	3	2	1	0	-	5) Appropriate use of the "EXIT" function in the program
4	3	2	(1)	0	-	6) Length of the program not too long to be tiring (The package requires a great deal of time to really get involved.)
(4)	3	2	1	0	-	7) Ease of following the program operating instructions

[16][3][0][1][0][—] Total (except NP and N/A): [20]

Section Comments: This package is helpful in teaching students to set up experiments; however, the teacher has to plan the package into several sessions in order to have the students use the package effectively. Besides, students may become bored because the screen format is all the same in each subprogram, and it takes much time to observe, record the experiment, and test the hypothesis.

Scoring:

Section	Sec. count-N/As : X	Total of first 4 no. in the [ ] :Y	Section Average : Y/X	Rating
Section a	10	36	3.6	Excellent
Section b	15	46	3.1	Good
Section c	4	14	3.5	Excellent
Section d	7	20	3.3	Good
Total	36	116	3.2	Good

Step 5: Fill out part II of the educational software evaluation system (personal evaluation) provided below.

The Educational Software Evaluation System

Part II: Personal Evaluation

Instruction: Please answer the following questions as concisely as possible.

1. What recommendation will you give of this piece of software? Please circle one.

a. HIGHLY recommend b. WILL recommend, with some changes c. NEVER recommend

2. List the changes specifically if you wish to see some changes made in this program.

3. Aside from the rating, what is your personal judgment on the quality of the software package (Circle one)? Explain why and make it as specific as possible.

Excellent Good Adequate Poor Trash

4. If you have tried this package with your learner and he/she enjoys using it, would you consider purchasing or using the software package (Circle one.)? Why.

YES NO

Step 6: Compare your comments with the *suggested guide* provided below.

The Educational Software Evaluation System *(Suggested Guide)*

Part II: Personal Evaluation

Instruction: Please answer the following questions as concisely as possible.

1. What recommendation will you give of this piece of software? Please circle one.

a. HIGHLY recommend (b. WILL recommend, with some changes) c. NEVER recommend

2. List the changes specifically if you wish to see some changes made in this program.

1) The screen layout in the program for observing experiments is all the same for every subprogram. It would increase user's interest if the screen design could be somewhat different in each subprogram to make the presentations more lively and creative. 2) The size of the specimen should be bigger to make each specimen more visible and distinctive in the differences among specimens. 3) The menu for setting up an experiment should be simplified for easier use.

3. Aside from the rating result, what is your personal judgment on the quality of the software package (Circle one)? Explain why and make it as specific as possible.

Excellent (Good) Adequate Poor Trash

The software package is good because it has the three major qualities: 1) It gives the user a clear view of the process it takes to conduct a life science experiment through the simulated effect. 2) It provides three phases from simple to complex identified as Training Lab, Explorer Lab and Challenge Lab helping the user learn about conducting various complex levels of experiments such as controlling from one variable to five variables, and running from single trial to multiple trials. 3) The content is appropriate and helpful for the intended users (6th-9th graders) to conduct life science experiments in the science class.

4. If you have tried this package with your student and he/she enjoys using it, would you consider purchasing or using the software package (Circle one.)? Why?

(YES) NO

The content of this package is great. The biggest challenge of the package is whether the student views it as motivating. If the student does, why not use it.

Appendix I

The Educational Software Evaluation System

Part I: Criteria Rating Form

Part II: Personal Evaluation

The Educational Software Evaluation System

Part I: Criteria Rating Form

Date: _____

Name of the Evaluator: _____

Title of the software package: _____

Instructions: *Please use the scale below to respond to each statement after you have reviewed the software package. Circle the number at the front of each entry to rate the software package reviewed based on each specified criterion. At the end of each section, add up the first four numbers in the brackets and put the total in the blank for total on the right.*

4 (EX, excellent)	3 (GD, good)	2 (AD, adequate)
1 (PR, poor)	0 (NP, not present)	- (N/A, not applicable)

Section a. Accuracy and value of the content.

EX	GD	AD	PR	NP	N/A	
4	3	2	1	0	-	1) Definition of objectives
4	3	2	1	0	-	2) Definition of target audience
4	3	2	1	0	-	3) Definition of prerequisite skills
4	3	2	1	0	-	4) Content accuracy
4	3	2	1	0	-	5) Orientation of content toward objectives
4	3	2	1	0	-	6) Appropriateness of content for intended users
4	3	2	1	0	-	7) Appropriate vocabulary level for subject area and the learner
4	3	2	1	0	-	8) Educational value of the content
4	3	2	1	0	-	9) Content is free of spelling, grammatical and typographical errors
4	3	2	1	0	-	10) Content is free of race, ethnic, sex and other stereotypes

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[ ][ ][ ][ ][ ] [ ] Total (except NP and N/A): [ ] Section Comments:

Section b. Effectiveness of instructional design.

EX	GD	AD	PR	NP	N/A	
4	3	2	1	0	-	1) Achievement of the package's defined purpose
4	3	2	1	0	-	2) Availability of varying levels of difficulty according to the skill level of the learner
4	3	2	1	0	-	3) Rate and sequence of instruction controlled by the learner
4	3	2	1	0	-	4) The package is motivational to use
4	3	2	1	0	-	5) The program can be used independently
4	3	2	1	0	-	6) Instructions in the program for the student
4	3	2	1	0	-	7) Effectiveness and appropriateness of feedback
4	3	2	1	0	-	8) Learner interaction with the program
4	3	2	1	0	-	9) Use of graphics, color or sound to enhance the instructional presentation
4	3	2	1	0	-	10) Integration of instruction with the learner's previous experience
4	3	2	1	0	-	11) Clearness and effectiveness of displays
4	3	2	1	0	-	12) Appropriateness in handling a wide range of student responses
4	3	2	1	0	-	13) Instructional presentation following a logical and sequential order
4	3	2	1	0	-	14) Application of learning to an appropriate range of situations
4	3	2	1	0	-	15) Availability of exercises, problems or questions for the learner to practice the types of skills, attitudes, or knowledge specified by the objectives

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[ ][ ][ ][ ][ ] [ ] Total (except NP and N/A): [ ] Section Comments:

Section c. Appropriate record-keeping and managment function.

EX	GD	AD	PR	NP	N/A	
4	3	2	1	0	-	1) Accuracy of the program's record keeping of learner's responses
4	3	2	1	0	-	2) Inclusion of diagnostic and evaluative testing in the program
4	3	2	1	0	-	3) Generating further assignments by the program
4	3	2	1	0	-	4) Reporting the learner's progress by the program
4	3	2	1	0	-	5) Allowing printouts or screen displays of the learner's records

---

[ ][ ][ ][ ][ ] [ ] Total (except NP and N/A): [ ] Section Comments:

Section d. Ease of use.

EX	GD	AD	PR	NP	N/A	
4	3	2	1	0	-	1) No break-down of the program under normal use
4	3	2	1	0	-	2) The program is free of errors
4	3	2	1	0	-	3) "HELP" procedures provided in the program
4	3	2	1	0	-	4) Comprehensiveness and effectiveness of users support materials such as manuals
4	3	2	1	0	-	5) Appropriate use of the "EXIT" function in the program
4	3	2	1	0	-	6) Length of the program not too long to be tiring
4	3	2	1	0	-	7) Ease of following the program operating instructions

[ ][ ][ ][ ][ ][ ] Total (except NP and N/A): [ ] Section Comments:

Table 1

The Scoring Aid

Section	Sec. count-N/As : X	Total of first 4 no. in the [ ] : Y	Section Average : Y/X	Rating
Section a	___	___	___	___
Section b	___	___	___	___
Section c	___	___	___	___
Section d	___	___	___	___
Total	___	___	___	___

Table 2

Rating Comparison Standard

Quality Rating	Excellent	Good	Adequate	Poor	Trash
Score Range	3.5 or above	2.5 - 3.4	1.5 - 2.4	0.5-1.4	Below 0.5

Part II: Personal Evaluation

Instruction: Please answer the following questions as concisely as possible.

1. What recommendation will you give of this piece of software? Please circle one.

a. HIGHLY recommend b. WILL recommend, with some changes c. NEVER recommend

2. List the changes specifically if you wish to see some changes made in this program.

3. Aside from the rating, what is your personal judgment on the quality of the software package (Circle one)? Explain why and make it as specific as possible.

Excellent Good Adequate Poor Trash

4. If you have tried this package with your learner and he/she enjoys using it, would you consider purchasing or using the software package (Circle one)? Why.

YES NO

Appendix II

An Example of Using the Educational Software Evaluation System

An Evaluation of the Educational Software Package:

The Problem Solving Strategies

The Educational Software Evaluation System

Part I: Criteria Rating Form

Name of the Evaluator: Linda Chang

Title of the software package: The Problem-Solving Strategies

***Instructions**: Please use the scale below to respond to each statement after you have reviewed the software package. Circle the number at the front of each entry to rate the software package based on each specified criterion. At the end of each section, add up the first four numbers in the brackets and put the total in the blank for total on the right.*

4 (EX, excellent)	3 (GD, good)	2 (AD, adequate)
1 (PR, poor)	0 (NP, not present)	- (N/A , not applicable)

Section a. Accuracy and value of the content.

EX	GD	AD	PR	NP	N/A	
(4)	3	2	1	0	-	1) Definition of objectives (clear, concise and measurable statements)
(4)	3	2	1	0	-	2) Definition of target audience (see the manual)
4	3	2	1	(0)	-	3) Definition of prerequisite skills (It was not stated anywhere.)
(4)	3	2	1	0	-	4) Content accuracy
(4)	3	2	1	0	-	5) Orientation of content toward objectives
(4)	3	2	1	0	-	6) Appropriateness of content for intended users
(4)	3	2	1	0	-	7) Appropriate vocabulary level for subject area and the learner
(4)	3	2	1	0	-	8) Educational value of the content (Provides different ways to solve a problem, training the user to be a creative problem-solver.)
4	(3)	2	1	0	-	9) Content is free of spelling, grammatical and typographical errors (I did not see any spelling errors, but there are syntactical mistakes such as missing a "to" in a sentence.)
(4)	3	2	1	0	-	10)Content is free of race, ethnic, sex and other stereotypes

---

[32][3][0][0][0] [-] Total (except NP and N/A): [35]

Section Comments: The content is valuable in training users to realize how different approaches can be used to solve one problem.

Section b. Effectiveness of instructional design.

EX	GD	AD	PR	NP	N/A	
(4)	3	2	1	0	-	1) Achievement of the package's defined purpose
(4)	3	2	1	0	-	2) Availability of varying levels of difficulty according to the skill level of the learner (Yes, for example, 4 levels available in the Thinking With Ink subprogram.)
4	(3)	2	1	0	-	3) Rate and sequence of instruction controlled by the learner (Rate, yes. To a large extent, the sequence is good. Sometimes I wish I could go back to change a decision I just made, I was not allowed.)
(4)	3	2	1	0	-	4) The package is motivational to use (I think it's great!)
(4)	3	2	1	0	-	5) The program can be used independently
(4)	3	2	1	0	-	6) Instructions in the program for the student (Very explicit & helpful explanations.)
4	(3)	2	1	0	-	7) Effectiveness and appropriateness of feedback (It is very appropriate. But, I wish the screen displays of the feedbacks could be more effective.)
(4)	3	2	1	0	-	8) Learner interaction with the program (It was very active because the user constantly makes choices, gives answers and read feedbacks.)
4	(3)	2	1	0	-	9) Use of graphics, color or sound to enhance the instructional presentation
(4)	3	2	1	0	-	10) Integration of instruction with the learner's previous experience
(4)	3	2	1	0	-	11) Clearness and effectiveness of displays
4	(3)	2	1	0	-	12) Appropriateness in handling a wide range of student responses
(4)	3	2	1	0	-	13) Instructional presentation following a logical and sequential order
4	(3)	2	1	0	-	14) Application of learning to an appropriate range of situations
4	(3)	2	1	0	-	15) Availability of exercises, problems or questions for the learner to practice the types of skills, attitudes, or knowledge specified by the objectives

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[36] [18] [0] [0] [0] [—] Total (except NP and N/A): [54]

Section Comments: The instructional design deserves compliments because the strategies used meet the learning objectives easily.

Section c. Appropriate record-keeping and management function.

EX	GD	AD	PR	NP	N/A	
(4)	3	2	1	0	-	1) Accuracy of the program's record keeping of learner's responses for later retrieval
4	(3)	2	1	0	-	2) Inclusion of diagnostic and evaluative testing in the program
(4)	3	2	1	0	-	3) Generating further assignments by the program
(4)	3	2	1	0	-	4) Reporting the learner's progress by the program
4	(3)	2	1	0	-	5) Allowing printouts or screen displays of the learner's records

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[12][6][0][0][0] [–] Total (except NP and N/A): [18]

Section Comments: Providing charts of learner's performance helps the learner easily see the pattern so as to generalize rules for the problem.

Section d. Ease of use.

EX	GD	AD	PR	NP	N/A	
(4)	3	2	1	0	-	1) No break-down of the program under normal use
4	(3)	2	1	0	-	2) The program is free of errors
4	3	2	1	0	(-)	3) "HELP" procedures provided in the program
(4)	3	2	1	0	-	4) Comprehensiveness and effectiveness of users support materials such as manuals
(4)	3	2	1	0	-	5) Appropriate use of the "EXIT" function in the program
4	3	(2)	1	0	-	6) Length of the program not too long to be tiring (It takes a little bit longer time for working on one subprogram than the specified time span.)
(4)	3	2	1	0	-	7) Ease of following the program operating instructions (Great!)

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[16][3][2][0][0] [1] Total (except NP and N/A): [21] Section Comments:

Part II: Personal Evaluation

1. What recommendation will you give of this piece of software? Please circle one.

(a) HIGHLY recommend b. WILL recommend, with some changes c. NEVER recommend

2. List the changes specifically if you wish to see some changes made in this program.

1) Reduce the time and frequency of reading from the disk.

2) Eliminate the blank screens when or shortly after a file is loaded from the disk.

3. Aside from the rating, what is your personal judgment on the quality of the software package (Circle one)? Explain why and make it as specific as possible.

(Excellent) Good Adequate Poor Trash

I think it is an excellent educational software package for teaching problem- solving strategies. The instructions and the problems provided in the package illustrate a great principle in problem-solving. That is, finding a way to generalize the rule or principle in solving a problem is the easiest solution rather than trying the exhaustive approach or even the trial and error method.

4. If you have tried this package with your learner and he/she enjoys using it, would you consider purchasing or using the software package (Circle one)? Why?

(YES) NO

It is an effective means in stimulating learner's thinking in solving problems.